

DRAFT QUALITATIVE REQUIREMENTS (QRs) / TECHNICAL DIRECTIVES (TDs)

BLANKET – WOOLLEN FOR CAPFs

1. Nomenclature

Blanket – Woollen, for use by personnel of CAPFs during winter season.

2. Scope and Functional Requirement

The blanket shall be a wool/polyamide blended, woven, milled and raised woollen blanket intended to provide adequate warmth, dimensional stability, durability and serviceability under field conditions. The construction and processing shall provide consistent thermal insulation and shall preferably achieve thermal performance equivalent to a TOG value of approximately $1.0\text{ }^{\circ}\text{C}\cdot\text{m}^2/\text{W}$ when tested in accordance with ISO 11092:2014.

3. Colour

Colour: Blue/ user(CAPF) approved shade, as specified by the procuring authority. The shade shall conform to the approved sealed pattern/colour standard.

4. Material and Construction – Technical Requirements

Sl.	Parameter	Requirement	Test Method / Standard
1	Blend composition	Wool $\geq 80\%$; polyamide 10–20%; residual matter $\leq 1.5\%$; total non-wool fraction $\leq 20\%$.	IS 667 / applicable fibre- composition method
2	Nature of wool	Virgin wool only. Recycled/reprocessed/refurbished/used wool not permitted.	IS 5910 / IS 744; traceability documents
3	Wool fineness	64S or better; average fibre diameter 20.60–22.04 μm . Finer than 20.60 μm may be accepted where it demonstrates better-than-64S quality.	IS 5910:2023; IS 744:2000 (RA 2022); IWTO-47 where applicable
4	Wool staple length	Minimum 50 mm.	IS 6653 / IS 10014 Part-1
5	Polyamide fineness	3–4 denier.	IS 10014 Part-2 / IS 744

Sl.	Parameter	Requirement	Test Method / Standard
6	Polyamide fibre length	Minimum 65 mm when manually straightened.	IS 10014 Part-1:1984 (RA 2023)
7	Yarn type	Wool/polyamide blended spun yarn, manufactured by woollen system.	Visual / applicable BIS method
8	Yarn count – warp	Mean universal count ≥ 4.0 Nm; not coarser than 252 Tex.	IS 681:2015 (RA 2019)
9	Yarn count – weft	Mean universal count ≥ 4.0 Nm; not coarser than 252 Tex.	IS 681:2015 (RA 2019)
10	Yarn twist	23–30 twists/dm.	IS 832 Part-1 / ISO 2061
11	Single yarn strength	Minimum 500 gf.	IS 1670
12	Weave	2/2 Twill.	Visual / fabric examination
13	Ends per dm	Minimum 120.	IS 1963
14	Picks per dm	Minimum 90.	IS 1963
15	Finish	Milled and raised.	Visual / workmanship
16	Mass per unit area	Minimum 675 g/m ² ; target approximately 685 g/m ² .	IS 1964
17	Length	230 cm minimum.	IS 1954:1990 (RA 2022)
18	Width	146 cm minimum.	IS 1954:1990 (RA 2022)
19	Thickness	2.5–3.5 mm; nominal 3.0 $\pm$ 0.5 mm.	IS 7702 / ISO 5084
20	Finished blanket mass	Minimum 2.25 kg for 230 $\times$ 146 cm.	IS 1964
21	Breaking strength – warp	Minimum 900 N.	IS 1969
22	Breaking strength – weft	Minimum 700 N.	IS 1969
23	Bursting strength	Minimum 18 kgf/cm ² (approx. 1765 kPa).	IS 1966 Part-1 / ISO 13938-1
24	Pilling resistance	Grade 3 or better.	IS 10971

Sl.	Parameter	Requirement	Test Method / Standard
25	Shrinkage	Maximum 3.5% in warp and weft.	IS 665 / applicable method
26	Colour fastness – light	Grade 4 or better.	IS 2454 / applicable method
27	Colour fastness – washing	Grade 4 or better.	IS/ISO 105-C10
28	Dyes	AZO-free dyes shall be used.	Relevant BIS/ISO method
29	Thermal performance	Preferably equivalent to TOG approximately $1.0^{\circ}\text{C}\cdot\text{m}^2/\text{W}$.	ISO 11092:2014
30	Piping	100% polyester; width 3.5 cm $\pm$ 1 mm; neat and securely stitched.	IS 1954 / visual inspection
31	Workmanship	Free from holes, cuts, stains, missing ends/picks, floats, thick/thin places, major weaving/dyeing defects and loose surface fibres.	Visual inspection / sealed sample

- Blend composition, mean fiber length, fiber length, fiber fineness, count of basic yarn are the manufacturing parameters and shall be tested on the raw materials.’

5. Raw Material Traceability and Certification

- Virgin wool shall be traceable to the source. Where imported virgin wool is used, relevant import/source documents and wool test/traceability certificates, including IWTO-31 where applicable, shall be produced at the stage specified in the tender/TD.
- The certificate/test report shall indicate fibre diameter and other relevant wool characteristics. The procuring authority may require testing of both raw wool and finished blanket.
- Use of recycled, reprocessed, refurbished or used wool shall not be permitted.

6. Quality Assurance and Inspection

Stage	Requirement
Technical Bid	Manufacturer shall submit applicable test reports/certificates and an undertaking of conformity to the QR/TD.
Prototype / Pre-production	Representative blanket/sample shall be evaluated against critical parameters before bulk production, where stipulated.
Bulk Production Inspection	Composition, wool fineness, yarn count, construction, GSM, dimensions, thickness, mass, strength, shrinkage, pilling and colour fastness shall be verified as specified.
Independent Testing agencies	WRA, NITRA, Tex. Committee and SASMIRA
Consignee Inspection	Quantity and visual inspection plus sampling/testing shall be carried out as per the approved acceptance plan.

7. Acceptance Criteria

The blanket shall be accepted only when the sampled/selected lot conforms to all mandatory parameters and the approved inspection/acceptance plan. Critical non-conformity in composition, wool quality, dimensions, strength, safety-related dye requirements or other designated critical parameters shall render the sample/lot liable to rejection.

8. Applicable Standards

Relevant latest editions/revisions of applicable BIS/ISO standards shall be used unless otherwise specified. Principal references include IS 667, IS 5910, IS 744, IS 681, IS 832 Part-1, ISO 2061, IS 1670, IS 1963, IS 1964, IS 1969, IS 7702, ISO 5084, IS 10971, IS 665, ISO 11092:2014 and applicable IS/ISO 105 colour-fastness methods.